

### REMARKS

Reconsideration and withdrawal of the rejections set forth in the Office Action dated December 19, 2008, is respectfully requested in view of this amendment. By this amendment, claims 1, 12, 16, 28, 32, 33, 36 and 41 have been amended. Claims 1-4 and 6-41 are pending in this application.

Claims 1, 12, 16, 28 and 41 have been amended to recite that the valve controls fluid flow exclusive of use of an accumulator for boosting fluid flow through the valve. Support for this feature is found in the original application, as found in Published Application US 2005/0268969, as explained below.

The application is entitled "Valve for Prevention of Low Flow Rates Through Flow Meter"; thus it is clear that the present subject matter is directed to a valve for preventing "low" flow rates through an associated flow meter.

The application describes a flow meter which prevents low flow rates through the flow meter by having a valve which:

- has an " open state having a flow rate *exceeding* the minimal measuring flow rate threshold";
- "resume[s] flow of only measurable quantities of fluid"; and
- "remains in its closed position as long as the pressure differential AP does not exceed a predetermined pressure".<sup>1</sup>

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<sup>1</sup> "The arrangement is such that...the valve enters a pulsating position having... an open state allowing fluid flow into the system; said open state having a flow rate *exceeding* the minimal measurable flow rate threshold" (Standard Paragraph [0011] of US 2005/0268969, emphasis added); "the system further comprising a flow responsive valve imparting the system with a flow pattern having a pulsating character so as to... *resume flow of only measurable quantities of fluid*" (Paragraph [0013], emphasis added); "According to another aspect the present invention is concerned with a method for metering fluid flow... and *resume flow of only measurable quantities of fluid*" (Paragraph [0014], emphasis added); "whereby the valve 50 remains in its closed position as long as the pressure differential AP does not exceed a predetermined pressure" (Paragraph [0047]); and "when the pressure differential over the inlet port 54 and outlet port 56 is smaller than a predetermined threshold, the valve 50 remains" (Paragraph [0048]).

Therefore, since Applicants' valve is adapted to only transition from a closed state to an open state at measureable flow rates, use of an accumulator for boosting fluid flow through the valve, thereby increasing the flow rate to a measureable level, does not add to operation of the valve, and in fact would raise the price of the assembly, without justification, and would make more difficult retrofitting the valve to an existing pipe line. In this connection it is noted that the present application teaches "A fluid supply system according to the claims is suitable for use with gases or liquids and has a significant advantage of being *inexpensive*, reliable and *suitable for easy retrofit installation on existing flow metering systems*" (Standard Paragraph [0016] of US 2005/0268969, emphasis added).

Claims 1, 12, 16, 28, 33 and 41 have been amended to change "measurable flow threshold" to "measuring flow threshold". Claims 32 and 36 have been amended to correct antecedent basis issues.

It is respectfully submitted that these amendments introduce no new matter within the meaning of 35 U.S.C. §132.

In the Office Action, claims 1, 28 and 41 were objected to and claims 1-4 and 6-41 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicants regard as the invention. Claims 1-4, 6-29 and 41 were rejected under 35 U.S.C. §103(a) as obvious over WO99/28722 to Jakobsson (hereinafter "*Jakobsson*"). Claims 30-32 and 34-40 were rejected under 35 U.S.C. §103(a) as obvious over *Jakobsson*, taken in view of Lam, et al. US 5,921,276 (hereinafter "*Lam*"). Claim 33 was deemed allowable over the cited art. Applicants request reconsideration and timely withdrawal of the pending rejections for the reasons discussed below.

### **Rejections Under 35 U.S.C. §112**

In the Office Action, claims 1, 28 and 41 were objected to and claims 1-4 and 6-41 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicants regard as the invention.

Claims 1, 28 and 41 were cited as not providing antecedent for "Minimum measurable flow threshold". Claims 1, 12, 28, 32, 33, 36 and 41 were rejected because of antecedent basis issues.

### **Response**

The Examiner cited claims 1, 12, 28, 33 and 41 with respect to the "minimum measurable flow" terminology. Accordingly, Applicants have made corrections to those claims and to claim 16, which had been identified by Applicants. The antecedent basis issues have also been addressed in claims 32 and 36.

### **Rejection of Claims 1-4, 6-29 and 41 under 35 USC §103(a)**

The Examiner rejected claims 1-4, 6-29 and 41 under 35 U.S.C. §103(a) as obvious over *Jakobsson*. Claims 30-32 and 34-40 were rejected under 35 U.S.C. §103(a) as obvious over *Jakobsson*, taken in view of *Lam*. *Jakobsson* is cited as disclosing a fluid metering system with an open position for high flow and a pulsating position to allegedly facilitate measurement of low flows.

### **Response**

This rejection is traversed as follows. To establish a *prima facie* case of obviousness, the Examiner must establish: (1) some suggestion or motivation to modify the references exists; (2) a reasonable expectation of success; and (3) the prior art references teach or suggest all of the claim limitations. *Amgen, Inc. v. Chugai Pharm. Co.*, 18 USPQ2d 1016, 1023 (Fed. Cir. 1991); *In re Fine*, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988); *In re Wilson*, 165 USPQ 494, 496 (CCPA 1970).

A *prima facie* case of obviousness must also include a showing of the reasons why it would be obvious to modify the references to produce the present invention. See *Dystar Textilfarben GMBH v. C. H. Patrick*, 464 F.3d 1356 (Fed. Cir. 2006). The Examiner bears the initial burden to provide some convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings. *Id.* at 1366.

Claim 1 now defines:

- "said valve has an open position *admitting fluid flow only at a flow rate above the minimum measuring flow threshold ... and is *exclusive of an accumulator used for boosting fluid flow* through the valve."*

It is noted that the other independent claims, Claims 12, 16, 28 and 41 are defined with at least the latter feature of Claim 1 above.

As was discussed during the interview, and will be elaborated further below, the cited art fails to show or suggest the use of a valve having an open position for admitting flow only at a flow rate above a minimum measuring flow rate of a flow meter which it is used with, and in which the valve is operated without an accumulator. Further, Applicants' claims describe the valve's configuration:

"... in which said valve is adapted either to prohibit fluid flow to the fluid supply line until a pressure differential over the valve ports is being built-up due to consumed flow rates, which are below the measuring flow threshold or to admit fluid flow into the supply line until the pressure differential diminishes below a predetermined threshold, *and is exclusive of use of an accumulator for boosting fluid flow through the valve...*" (Claim 1, emphasis added; Claims 12, 16, 28, 33 and 41 each define at least the emphasized feature).

Thus in Applicants' claims, it is clear that the defined valve only admits fluid flow only at a flow rate sufficient for the flow meter to measure it. Further, in Applicants' claimed configuration, the valve controls fluid flow exclusive of use of an accumulator for boosting fluid flow through the valve.

Thus Claim 1, and the other independent claims (Claims 12, 16, 28, 33 and 41) which all set forth similar subject matter, are novel and unobvious over Jakobsson.

To remove all doubt, an explanation of how features of the subject matter as cited above, are not disclosed in *Jakobsson*, is detailed as follows.

*Jakobsson* introduces a third embodiment, shown in the Figs 6a and 6b, and only when reaching this embodiment in the specification thereof, addresses an issue of measuring small flows. Specifically, *Jakobsson* reads "*In this arrangement, a valve... is used in connection with a flow meter 17 and a springing or elastically expandable space, a pulsator 19. With the help of this arrangement, even such small flows can be measured that normally cannot be measured by a meter*".

Applicants note that *Jakobsson*'s "pulsator" is an accumulator for boosting fluid flow through the valve thereof, so that the flow through the valve is boosted to a measureable level.

As can be understood from the operation of *Jakobsson*:

- the accumulator ("pulsator") accumulates liquid or gas;
- the valve opens at a flow rate *below* the measureable flow level;
- fluid flow passes through the flow meter and valve, at a flow rate *below* the measureable flow level, the change in pressure downstream of the valve causing the liquid or the gas accumulated in the accumulator to be subsequently expelled; and
- the expelled liquid or gas boosts the fluid flow through the flow meter and valve, to raise the flow rate to a measurable flow level.

Therefore *Jakobsson*, the valve admits fluid flow at a flow rate insufficient for the flow meter to measure such flow and then boosts that flow rate via use of an accumulator ("pulsator 19").

Thus it is clear that *Jakobsson* fails to show or suggest the use of a valve having an open position for admitting flow only at a flow rate above a minimum measuring flow rate of a flow meter which it is used with.

Thus Claim 1 is deemed to be novel and unobvious over *Jakobsson*. Consequently the claims dependent from Claim 1 should be in form for acceptance as being based off an acceptable claim.

Additionally, *Jakobsson* requires a shunt piping (18) receiving a parallel flow of water from the supply line in order to determine the threshold for opening and closing the valve. In other words, one is forced to have an additional pipe comprising a separate valve system for monitoring any leakage taking place downstream, as described by *Jakobsson*, "... when the flow meter would not normally react at all, the flow cannot pass through the meter 17 when the valve is closed (Fig. 6a) without the flow being forced to pass in a shunt piping 18 to the pulsator 19." (*Jakobsson* at page 5, lines 19-22.) This uses the shunt and fluid displacement within the shunt to address minimum flow measurement. When the diaphragm (element 13 of *Jakobsson*, Figs. 6A and 6B) or bladder (element 13 of *Jakobsson*, Figs. 7-8) compresses, fluid in the shunt is used to increase flow through the meter (element 17 of *Jakobsson*).

The shunt piping is of particular interest because Applicants' system does not require shunt piping. The claimed configuration without the shunt piping has certain advantages, including eliminating the possibility of additional leakage, the cost of providing and assembling the shunt piping and accumulator for boosting flow through the valve, and additional space required for installation of the shunt piping.

As noted above, that the present application teaches, "A fluid supply system according to the concerned invention is suitable for use with gases or liquids and has a significant advantage of being *inexpensive*, reliable and *suitable for easy retrofit installation on existing flow metering systems*" (Standard Paragraph [0016] of US 2005/0268969, emphasis added).

Thus, as stated previously, *Jakobsson* uses both a shunt line (element 18 of *Jakobsson*) and an accumulator for boosting flow through the valve thereof, which are at least two of the differences to the subject matter defined in claims 1, 12, 16, 28, 33 and 41.

To clarify our prior response, *Jakobsson* relies on a shunt piping (18) receiving a parallel flow of water from the supply line in order to boost fluid through the valve thereof, after that

valve has opened below a measurable fluid flow level, the boost causing an increase in the flow rate through the valve to a measureable level. In other words, one is forced to have an additional pipe comprising a separate valve system for monitoring any leakage taking place downstream.

It is further noted that use of such shunt piping for operation of the pulsator, using downstream fluid may render *Jakobsson's* system more likely to malfunction, as is explained in the present application, "A further advantage of the valve in accordance with the present invention, is that it serves also as a one way valve. This feature is of particular importance e.g. in connection with a water supply system and serves to prevent flow of contaminated water towards the supplier in case of a flood or burst in supply pipes, *where there is risk of mud and dirt entering the system* and flowing upstream and possibly contaminating water reservoirs and harming equipment of the water supplier." (Standard Paragraph [0057] of US 2005/0268969, emphasis added).

It is also added that the use of an accumulator for boosting flow through a flow meter may, possibly, render the flow measurement inaccurate, contrary to the desired objective, since such boosting may cause a flow meter impeller to continue revolving even after termination of liquid flow through the flow meter. Such excess revolving is noted in Standard Paragraph [0058] of US 2005/0268969 of the present invention.

Thus, it is Applicants' position that *Jakobsson* fails to show or suggest Applicants' claimed subject matter as set forth in claims 1, 11, 18 and 20. It is therefore respectfully submitted that the rejection under 35 U.S.C. 103(a) should be withdrawn.

#### **Rejection of Claims 30-32 and 34-40 Under 35 U.S.C. §103(a)**

The Examiner rejected claims 30-32 and 34-40 under 35 U.S.C. §103(a) as obvious over *Jakobsson*, taken in view of *Lam*.

#### **Response**

This rejection is traversed because there is no showing of a *prima facie* case of obviousness, as indicated above.

As indicated above and discussed during the interview, the *Jakobsson* reference describes the use of a shunt line and diaphragm to address minimum flow issues. Applicants have further clarified this by describing the "exclusive of use of an accumulator for boosting fluid flow through the valve" in each independent claim.

Claims 30-32 and 34-40 depend from claim 28. *Lam* fails to cure the deficiencies of *Jakobsson* noted above with regard to claims 1, 12, 16, and 28. *Lam* teaches a valve that is intended for high flow rates, and as such is completely irrelevant to the control valve disclosed in the present subject matter, which is adapted to prevent leakage. Thus, *Lam* fails to teach or suggest the valve as claimed. Hence, claims 30-32 and 34-40 are allowable at least because they depend from an allowable claim 28.

With respect to Claim 41, the use of an impeller as the fluid flowmeter fails to suggest the implementation of Applicants features relating to the check valve opening at a predetermined threshold in excess of the minimum measured flow rate.

Accordingly, Applicants respectfully request withdrawal of the 35 U.S.C. §103(a) rejection of claims 30-32 and 34-41. It is therefore respectfully submitted that the rejection under 35 U.S.C. 103(a) should be withdrawn.

#### **Allowed Claim**

The Examiner indicated that claim 33 is allowable over the prior art of record. Applicants appreciate this determination of allowability.

#### **Request for Further Telephone Interview**

If the Examiner is not persuaded by the enclosed amendments and arguments, Applicants respectfully request the Examiner to call the undersigned attorney to set up a telephonic interview between the Examiner, Applicants' representatives in Israel and the undersigned attorney.



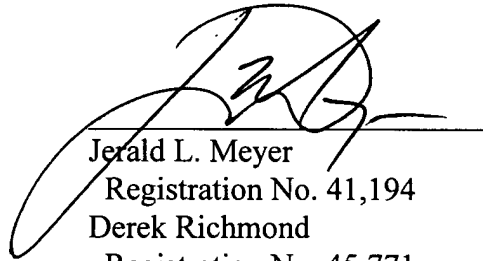
**CONCLUSION**

Applicants believe that a full and complete response has been made to the pending Office Action and respectfully submits that all of the stated grounds for rejection have been overcome or rendered moot. Accordingly, Applicants respectfully submit that all pending claims are allowable and that the application is in condition for allowance.

Respectfully submitted,  
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